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ER Document Catalog Number: ER2001-0448				
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Environmental Restoration Project
Standard Operating Procedure

for:

Chip Sampling of Porous Surfaces

Los Alamos
NATIONAL
LABORATORY

Los Alamos, New Mexico 87545

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Revision Log

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Chip Sampling of Porous Surfaces

1.0 PURPOSE

This SOP describes the process for collecting chip samples representative of porous surfaces at the Los Alamos National Laboratory (Laboratory) Environmental Restoration (ER) Project.

2.0 SCOPE

This SOP is a mandatory document and shall be implemented by all ER Project participants when collecting chip samples of porous surfaces for the ER Project.

Note: Subcontractors performing work under the ER Project's quality program shall follow this SOP for collecting chip samples of porous surfaces or may use their own procedure(s) as long as the substitute meets the requirements prescribed by the ER Project Quality Management Plan, and is approved by the ER Project's Quality Program Project Leader (QPPL) before the commencement of the designated activities.

3.0 TRAINING

The **Field Team Leader** (FTL) is responsible for ensuring that field team members who collect chip samples representative of porous surfaces for the ER Project are familiar with the objectives of, and properly trained in, the procedures of chip sampling of porous surfaces. In addition, all field team members must document at <http://erinternal.lanl.gov/Training/Trainingmain.shtml> that they have read and understand this procedure in accordance with QP-2.2.

4.0 DEFINITIONS

Note: A glossary of definitions can be found on the ER Project internal home page: <http://erinternal.lanl.gov/WritingGuide.shtml>.

- 4.1 Non-porous inclusions — Materials such as stone, glass, or metal, embedded in porous material.
- 4.2 Porous surface — For the purpose of this procedure, a surface capable of allowing the passage of liquid through pores or small crevices. Examples of porous materials applicable to the ER Project include asphalt, concrete, wood, brick, unglazed clay pipe, and tuff.
- 4.3 Site-Specific Health and Safety Plan (SSHASP)—A health and safety plan that is specific to a site or ER-related field activity that has been approved by an ER health and safety representative. This document contains information

specific to the project including scope of work, relevant history, descriptions of hazards by activity associated with the project site(s), and techniques for exposure mitigation (e.g., personal protective equipment [PPE]) and hazard mitigation.

5.0 BACKGROUND AND PRECAUTIONS

- 5.1 This SOP shall be used in conjunction with an approved SSHASP. Also, consult the SSHASP for information on and use of all PPE.
- 5.2 All waste generated from sampling operations should be handled in accordance with ER-SOP-1.06, Management of Environmental Restoration Project Wastes.
- 5.3 This SOP shall not be used in environments potentially contaminated with flammable or explosive components.

6.0 RESPONSIBLE PERSONNEL

The following personnel are responsible for activities identified in this procedure.

- 6.1 Author
- 6.2 Document Control Coordinator
- 6.3 ER Project personnel
- 6.4 Field Team Leader (FTL)
- 6.5 Quality Program Project Leader

7.0 EQUIPMENT

A checklist of suggested equipment and supplies needed to implement this procedure is provided in Attachment A.

8.0 PROCEDURE

Note: ER Project personnel may produce paper copies of this procedure printed from the controlled-document electronic file located at http://erinternal.lanl.gov/home_links/Library_proc.shtml However, it is each person's responsibility to ensure that they trained to and utilize the current version of this procedure. The **author** may be contacted if text is unclear. The **Document Control Coordinator** may be contacted if the author cannot be located.

Note: Deviations from SOPs are made in accordance with QP-4.2, Standard Operating Procedure Development, and documented in accordance with

QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities.

- 8.1 ER-SOP-1.02, ER-SOP-1.03, and ER-SOP-1.04, provide guidance for using sample containers and documenting, packaging, and shipping collected samples. Coordinate with the Field Support Facility for further guidance regarding sample containers, preservation, and shipment to the analytical laboratory.
- 8.2 Gather and decontaminate the necessary supplies and equipment in accordance with ER-SOP-1.08, Field Decontamination of Drilling and Sampling Equipment.
- 8.3 If possible, remove any non-porous inclusions from the sampling location by brushing or wiping, as appropriate. Using a chisel, drill, hole saw, or similar tool, collect a minimum of 100 g of the sample to a depth of 2 cm, or to an alternate depth specified in applicable planning documents. The collected chips may be of any convenient size unless otherwise specified in applicable planning documents.
- 8.4 Transfer the sample to an appropriate sample container. ER-SOP-1.02, Sample Containers and Preservation, provides guidance regarding the amount of sample, the type of sample container, the holding time, and the preservation techniques to be used for each analysis to be conducted.
- 8.5 Complete Sample Collection Logs and Chain of Custody Forms; label sample containers and complete documentation in accordance with both ER-SOP-1.02, Sample Containers and Preservation, and SOP-1.04, Sample Control and Field Documentation.

Note: If collecting multiple samples using this method, avoid cross-contamination by decontaminating all sampling tools prior to collecting the next sample. If the sampler's gloves come in contact with the sampled material during sampling, gloves should also be changed prior to collecting the next sample.

- 8.6 Collect any additional samples for field quality control, as specified in ER-SOP-1.05, Field Quality Control Samples.
- 8.7 Clearly mark the sampled surfaces with a pin flag or a wooden or metal stake. The mark should include the sample location identification number. Document the site with photographs, if appropriate.
- 8.8 Pack the samples for shipping to the Sample Management Office (SMO). Handle sampling wastes, excess sample materials, disposable items, and decontamination fluids according to ER-SOP-1.06, Management of Environmental Restoration Project Wastes.

- 8.9 Upon completing sampling, pack up equipment for cleaning and return the equipment and supplies to their proper storage locations.
- 8.10 Perform lessons learned. During the performance of work, identify, document, and submit lessons learned, as appropriate, in accordance with QP-3.2, Lessons Learned, located at http://erinternal.lanl.gov/home_links/Library_proc.shtml

9.0 REFERENCES

ER Project personnel using this procedure should become familiar with the contents of the following documents to properly implement this SOP.

- ER Project Quality Management Plan located at http://erinternal.lanl.gov/home_links/Library_proc.htm.
- ER-SOP-1.02, Sample Containers and Preservation
- ER-SOP-1.03, Handling, Packaging, and Transporting Field Samples
- ER-SOP-1.04, Sample Control and Field Documentation
- ER-SOP-1.05, Field Quality Control Samples

The following documents are cited within this procedure:

- ER-SOP-1.02, Sample Containers and Preservation
- ER-SOP-1.03, Handling, Packaging, and Transporting Field Samples
- ER-SOP-1.04, Sample Control and Field Documentation
- ER-SOP-1.05, Field Quality Control Samples
- ER-SOP-1.06, Management of Environmental Restoration Project Wastes
- ER-SOP-1.08, Field Decontamination of Drilling and Sampling Equipment
- QP-2.2, Personnel Orientation and Training
- QP-3.2, Lessons Learned
- QP-4.2, Standard Operating Procedure Development
- QP-4.4, Record Transmittal to the Records Processing Facility
- QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities

10.0 RECORDS

The **FTL** is responsible for submitting the following records (processed in accordance with QP-4.4, Record Transmittal to the Records Processing Facility) to the Records Processing Facility.

10.1 Chain-of-Custody Form/Request-for-Analysis Form

10.2 Daily activity logs, or entries in a field notebook, including any deviations or other pertinent information

10.3 Sample collection logs

11.0 ATTACHMENTS

The document user may employ documentation formats different from those attached to/named in this procedure—as long as the substituted formats in use provide, as a minimum, the information required in the official forms developed by the procedure.

Attachment A: Equipment and Supplies Checklist for Chip Sampling of Porous Surfaces (1 page) located at
<http://erinternal.lanl.gov/Quality/user/forms.asp>.

[Using a token card, click here to record "self-study" training to this procedure.](#)

If you do not possess a token card or encounter problems, contact the RRES-ECR training specialist.

Equipment and Supplies Checklist for Chip Sampling of Porous Surfaces

Protective equipment

- ☐ Safety glasses
- ☐ Sturdy work boots
- ☐ Work gloves
- ☐ Any PPE listed or required in the SSHASP

Sample preparation equipment

- ☐ Alconox
- ☐ Blue Ice or equivalent
- ☐ Camera and film
- ☐ Chem wipes
- ☐ Cleaning wipes
- ☐ Disposable laboratory gloves
- ☐ Paint or other indelible medium to identify sample location
- ☐ Sample containers and preservatives
- ☐ Storage containers for decontamination solutions

Sample collection and decontamination equipment

- ☐ Brushes (galvanized, stainless-steel, or plastic)
- ☐ Brushes (long handle, scrub, or wire)
- ☐ Drive hammer (3 to 10 lb)
- ☐ Wash tub or plastic bucket
- ☐ Garden pressure sprayer or squeeze bottle sprayer
- ☐ Plastic sheet
- ☐ Stainless-steel chisel
- ☐ Stainless-steel drill
- ☐ Stainless-steel hole saw
- ☐ Tape measure
- ☐ Trash bags

Paperwork

- ☐ Borehole log (soil) form
- ☐ Chain-of-Custody Form/Request-for-Analysis Form
- ☐ Custody seals
- ☐ Daily activity logs or field notebook
- ☐ Sample collection log
- ☐ Sample labels
- ☐ Any additional supplies listed in associated procedures, as needed

Note: This checklist is provided as a guide and is not intended to be all-inclusive.

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